

Form PTO-1449		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. H0004116-US	SERIAL NO. 10/614,807
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				FILING DATE July 9, 2003	GROUP 1737

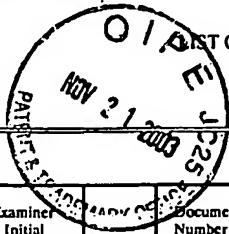
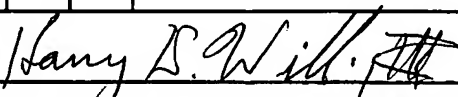
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	AB	5,772,860	06-1998	Sawada et al.		
	AC	5,993,621	11-1999	Liu		
	AD	5,798,005	08-1998	Murata et al.		
	AE	5,282,946	02-1994	Kinoshita et al.		
	AF	5,993,575	11-1999	Lo et al.		
	AG	5,809,393	09-1998	Dunlop et al.		
	AH	5,780,755	07-1998	Dunlop		
	AI	5,468,401	11-1995	Lum		
	AJ	5,087,297	02-1992	Pouliquen		
HL	AK	5,693,203	12-1997	Ohhashi		
	AL	5,400,633	03-1995	Segal		

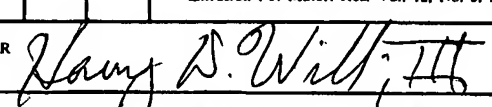
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	AN	9201080	01/1992	PCT	C23C	14/35	
NW	AO	610107	01/1994	Japan ("transl. of Abst")	C22	18	X*
	AP	693400	04/1994	Japan ("transl. of Abst")	C22	18	X*
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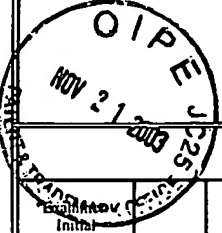
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)		
NW	AR	C. Klein et al., "Manual of Mineralogy", pp 39-40
NW	AS	S. Wright et al. "Effect of Annealing Temperature on the Texture of Rolled Tantalum and Tantalum-10 Wt.% Tungsten, reprinted from Tungsten and Refractory Metals 2, pp 501-508
NW	AT	H-R Wenk, "Preferred Orientation in Deformed Metals and Rocks: An Introduction to Modern Texture Analysis", 1985, pp 8-10

EXAMINER <i>Larry S. Wilt, JTT</i>	DATE CONSIDERED <i>12/5/05</i>
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-144B		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. H0004116-US		SERIAL NO. 10/614,807	
				LIST OF ART CITED BY APPLICANT (Use several sheets if necessary)			
APPLICANT Vladimir Segal et al.				FILING DATE July 9, 2003		GROUP 1737	
U.S. PATENT DOCUMENTS							
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	HW	AA 5,513,512	05-1996	Segal			
		AB 5,590,389	12-1996	Dunlop			
		AC 5,600,989	02-1997	Segal			
		AD 5,673,581	10-1997	Segal			
		AE 5,074,907	12-1991	Amato et al.			
		AF 4,525,417	06-1985	Dimigen et al.			
		AG 4,663,120	05-1987	Parent et al.			
		AH 4,762,558	08-1988	German et al.			
		AI 4,889,745	12-1989	Sata			
		AJ 5,330,701	07-1994	Shaw et al.			
		AK 5,418,071	05-1995	Satou et al.			
	HW	AL 5,508,000	04-1996	Satou et al.			
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	HW	AM 08269701	10/1996	Japan			X
	HW	AN 08232061	06/1996	Japan			X
	HW	AO 882 813	12/1998	EPO			
	HW	AP WO 99/66100	12/1999	PCT			
	HW	AQ WO 87/07650	12/1987	PCT			
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)							
	HW	AR	B.D. Cullity, "Structure of Polycrystalline Aggregates", <u>Elements of X-ray Diffraction</u> , pp 294-297				
		AS					
	HW	AT	ASM Handbook, Vol. 4, 1991, "Heat Treating of Aluminum Alloys", pgs. 841-879.				
EXAMINER					DATE CONSIDERED 12/5/05		
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

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	LW	AA 5,608,911	03-1997	Shaw et al.			
		AB 4,842,706	06-1989	Fukasawa et al.			
		AC 4,960,163	10-1990	Fang et al.			
		AD 5,850,755	12-1998	Segal			
		AE 5,456,815	10-1995	Fukuyo et al.			
		AF 5,826,456	10-1998	Kawazoe et al.			
		AG 5,413,650	05-1995	Jarrett et al.			
		AH 6,193,821	02-2001	Zhang			
		AI 6,348,113	02-2002	Michaluk et al.			
		AJ 6,085,966	07-2000	Shimomuki et al.			
		AK 6,024,852	02-2000	Tamura et al.			
	LW	AL 5,798,005	08-1998	Murata et al.			
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		AM					
		AN					
	LW	AO 06264232	09/1994	Japan			X
	LW	AP WO 00/31310	06/2000	PCT			
		AQ					
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)							
	LW	AR	Mukai, T. et al. "Dynamic Mechanical Properties of a Near-Nano Aluminum Alloy Processed by Equal-Channel-Angular-Extrusion",				
			Nano-Structured Materials, Vol. 10, No. 5, pp. 755-765 (1998) Elsevier Science Ltd.				
	LW	AS	Hatch, J.E. <u>ALUMINUM</u> . 1984, Chap. 5, "Metallurgy of Heat Treatment and General Principles of Precipitation Hardening", pp. 134-				
			157, 175-183.				
	LW	AT	Ferrasse, S. et al., "Development of a Submicrometer-Grained Microstructure in Aluminum 6061 Using Equal Channel Angular				
			Extrusion". J. Mater. Res. Vol. 12, No. 5, May 1997, pp. 1253-1261.				
EXAMINER					DATE CONSIDERED		
					12/5/05		
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NW	AA	5,231,306	07-1993	Meikle			
	AB	3,653,981	04-1972	Watanabe et al.			
	AC	3,849,212	11-1974	Thornburg			
	AD	5,766,380	06-1998	Lo et al.			
	AE	6,123,896	09-2000	Meeks, III et al.			
	AF	5,722,165	03-1998	Kobayashi et al.			
	AG	5,171,379	12-1992	Kumar et al.			
	AH	4,517,032	05-1985	Goto et al.			
	AI	5,772,795	06-1998	Lally et al.			
	AJ	6,221,178 B1	04-2001	Torizuka et al.			
	AK	4,466,940	08-1984	Siewert et al.			
NW	AL	4,883,721	11-1989	Nalepka et al.			
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NW	AM	08146201	07.06.1996	Japan			
NW	AN	10008244	13.01.1998	Japan			
NW	AO	WO 99/27150	03.06.1999	PCT			
NW	AP	WO 99/02743	21.01.1999	PCT			
NW	AQ	WO 01/29279 A1	26.04.2001	PCT			
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)							
NW	AR	Ferrasse, S. et al., "Microstructure and Properties of Copper and Aluminum Alloy 3003 Heavily Worked by Equal Channel Angular Extrusion", Metallurgical and Materials Transactions A, vol. 28A, April 1997, pp. 1047-1057.					
NW	AS						
	AT	Material Evaluation Report, Ingot No. T891C, 03/25/98, 1 page.					
EXAMINER <i>Harry S. Wilk, III</i>				DATE CONSIDERED <i>12/5/05</i>			
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HW	AA 4,374,717	02-1983	Drauglis et al.				
	AB 5,623,726	04-1997	Kiiski et al.				
	AC 5,194,101	03-1993	Worcester et al.				
	AD 6,521,173	02-2003	Kumar				
	AE 4,844,746	07-1989	Hormann et al.				
NW	AF 6,348,139	06-1998	Shah				
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NW	AM 03-082773	08.04.1991	Japan (abstract only)				
NW	AN 08-134606	28.05.1996	Japan (abstract only)				
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NW	AP 55-179784	12/1980	Japan				
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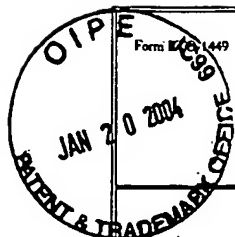
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NW	AR		Hughes et al., "Grain Subdivision and the Development of Local Orientations in Rolled Tantalum" Tantalum, The Minerals, Metals & Materials Society, 1996, pgs. 257-262. (Year is sufficiently early so that the month is not an issue.)
NW	AS		Arli, Jr., "Sulfonation and Sulfonation to Thorium and Thorium Compounds" Kirk-Othmer Encyclopedia of chemical Technology vol. 22, pp. 541-564, (1993, Year is sufficiently early so that the month is not an issue).
NW	AT		Kirkbride et al., "The Effect of Yttrium on the Recrystallization and Grain Growth of Tantalum", J. Less-Common Metals, vol. 9, pp. 393-408, 1965. (Year is sufficiently early so that the month is not an issue.)

EXAMINER <i>Harry H. Wilk</i>	DATE CONSIDERED <i>12/5/05</i>
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NW	AE	EP0281141B2	03-1988	EPO			
NW	AF	59227992A	12-1984	Japan			
	AG						
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)							
NW	AH	National Research Corporation Press Release, pgs. 1-4, July 1964.					
NW	AI	National Research Corporation Data Sheet "SGS Tantalum", pgs. 1-7, no date.					
NW	AJ	Friedman, "Grain Size Refinement in a Tantalum Ingot", Metallurgical Transactions, Vol. 2 No. 1, January 1971, pages 337-341.					
NW	AK	"Nickel, Cobalt and Their Alloys", pub. By ASM International, December 2000, pages 76, 230-234.					
	AL	Ruglic, "Normalizing of Steel" ASM Handbook, Vol. 4 Heat Treating, 1991, pgs. 35-41.					
	AM	Canonica, "Stress-Relief Heat Treating of Steel", ASM Handbook Vol 4: Heat Treating ASM International, 1991, pages 33-34.					
NW	AN	ASTM Standard Specification for Tantalum and Tantalum Alloy Plate, Sheet, and Strip, pgs. 558-561, 1992. (Year is sufficiently early so that the month is not an issue.)					
EXAMINER		DATE CONSIDERED 12/5/05 <i>Gary S. Wall</i>					
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	AD	NW	Susumu Sawada, "On Advanced Sputtering Targets of Refractory Metals and Their Silicides for VLSI-Applications", 12 th International Plansee Seminar (1989) Topic 5: Ultrapure Refractory Metals, pp. 201-222.		
	AE	NW	Kumar, et al. "Effect of Intermetallic Compounds of the Properties of Tantalum" Materials Research Society Symposium Proceedings, vol. 322, pgs. 413-422, 1994. (Year is sufficiently early so that the month is not an issue.)		
	AF	NW	Kumar, et al. "Effect of Intermetallic Compounds of the Properties of Tantalum" Refractory Metals & Hard Materials, vol. 12, pgs. 35-40, 1994. (Year is sufficiently early so that the month is not an issue.)		
	AG	NW	Klein et al., "Inhomogeneous Textures in Tantalum Sheets" Materials Science Forum, vol. 157-162, pgs. 1423, (1994). (Year is sufficiently early so that the month is not an issue.)		
	AH	NW	Clark et al., "Influence of Transverse Rolling on the Microstructural and Texture Development in Pure Tantalum", Metallurgical Transactions, vol. 23A, pgs. 2183-2191, August 1992.		
	AI	NW	Raabe, et al., "Texture and Microstructure of Rolled and Annealed Tantalum", Materials Science and Technology, Vol. 10, pgs. 299-305, April 1994.		
	AJ	NW	Wright et al., "Texture Gradient Effects in Tantalum", International Conference on Textures of Materials, 7 pgs., September 1993.		
	AK	NW	Wright et al., "Textural and Microstructural Gradient Effects on the Mechanical Behavior of a Tantalum Plate", Metallurgical Transactions A, 25A (1994), pgs. 1-17. (Year is sufficiently early so that the month is not an issue.)		
	AL	NW	Clark et al., "Effect of Processing Variables on Texture and Texture Gradients in Tantalum", Metallurgical Transactions A, Vol. 22A, September 1991, pgs. 2039-2047.		
	AM	NW	Kumar et al., "Corrosion Resistant Properties of Tantalum" Corrosion 95, Paper No. 253, 14 pages. (No date)		
	AN				
	AO	NW	V.M. Segal, "Materials Processing by Simple Shear", Materials Science and Engineering A, Volume 197, 1995, pgs. 157-164. (Year is sufficiently early so that the month is not an issue.)		
	AP	NW	P. Ding et al., "Copper Barrier, Seed Layer, and Planarization Technologies", June 10-12, 1997 VMIC Conference, pp. 87-92.		
EXAMINER		DATE CONSIDERED 12/5/05 <i>Henry D. Will, Jr.</i>			
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Vladimir Segal et al.FILING DATE
July 9, 2003GROUP
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U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
HW	AA	6,454,994	09-2002	Wang			
HW	AB	6,113,761	09-2000	Kardokus et al.			
HW	AC	6,139,701	10-2000	Private et al.			
HW	AD	3,497,402	02-1970	Douglass et al.			
HW	AE	3,001,003,373,671 2003023726	09-2001	Koenigsmann et al.			
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	AJ						
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	AO							
	AP							
	AQ							

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)

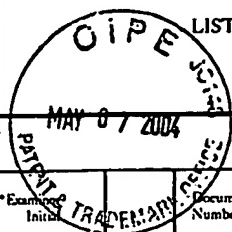
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U.S. PATENT DOCUMENTS

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HW	AM JP362089543A	04-1987	Japan (Abstract)				
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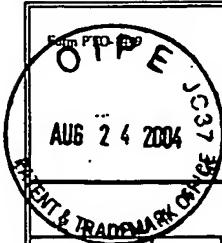
HW	AR	"Aluminum and Aluminum Alloys" ASM International, 1993, pp 290-292.
HW	AS	Clark et al, "Influence of Initial Ingot Breakdown on the Microstructural and Textural Development of High Purity Tantalum", Metallurgical Transactions, vol. 22A, pp. 2959-2968, December 1991.
	AT	

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Dany S. Wall, Jr. 12/5/05

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HW	AK		F. J. Humphreys et al., "Developing stable fine-grain microstructures by large strain deformation", Phil. Trans. R. Soc. Lond. A, June 15, 1999, Vol. 357 #1756, pp. 1663-1681.				
HW	AL		S. Ferrasse et al., "Texture evolution during equal channel angular extrusion Part I. Effect of route, number of passes and initial texture", Materials Science and Engineering, Vol. 368, March 15, 2004, pp. 28-40.				
HW	AM		V.M. Segal, "Equal channel angular extrusion: from macromechanics to structure formation", Materials Science & Engineering A271, November 1, 1999, pp. 322-333.				
HW	AN		Ruslan Z. Valiev et al., "SPD-Processed Ultra-Fine Grained Ti Materials for Medical Applications", Advanced Materials & Processes, December 2003, pp. 33-34.				
HW	AR		Segal et al., "Plastic Working of Metals by Simple Shear", Russian Metall. Vol. 1, pp. 99-105, 1991.				
HW	AS		M. Furukawa et al., "Microhardness Measurements and the Hall-Petch Relationship in an Al-Mg Alloy with Submicrometer Grain Size", Acta Mater. Vol. 44, No. 11, pp. 4619-4629, 1996.				
HW	AT		Yoshinori Iwahashi et al., "Microstructural Characteristics of Ultrafine-Grained Aluminum Produced Using Equal-Channel Angular Pressing", Metallurgical and Materials Transactions, Vol. 29A, pp. 2245-2252, September 1998.				
EXAMINER	DATE CONSIDERED Lang S. Will - JA 12/5/05						
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U.S. PATENT DOCUMENTS

*Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	AB					
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	AC					
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FOREIGN PATENT DOCUMENTS

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		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
	AF							
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HW	AK	S. Ferrasse et al., "ECAE Targets with Sub-Micron Grain Structures Improve Sputtering Performance and Cost-of-Ownership", Semiconductor Manufacturing, Vol. 4, Issue 10, October 2003, pp. 76-92.
HW	AL	R.Z. Valiev et al., "Bulk Nanostructured materials from severe plastic deformation", Progress in Materials Science, Vol. 45, 2000, pp. 103-189.
HW	AM	R. Z. Valiev et al., "Plastic Deformation of alloys with submicron-grained structure", Materials Science and Engineering, A137(1991) pp. 35-40.
HW	AN	V. M. Segal et al., "Processes of Plastic Structure Formation", Science and Engineering, 1994, published in Russia, Chapters 1, 3 and 4, with Statement in Accordance with 37 CFR 1.98(a)(3)(i).
HW	AR	Lyman et al., Metals Handbook, pub. by American Society for Metals, 8 th edition, 1961, pp. 15 and 18.
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Harry S. Wilk, III 12/5/05

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*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date (if appropriate)
HW	AA	3,616,282	10-1971	Bodway			
HW	AB	4,000,055	12-1976	Kumagai			
HW	AC	4,020,222	04-1977	Kausche et al.			
HW	AD	5,994,181	11-1999	Hsieh et al.			
HW	AE	4,589,938	03-1986	Park			

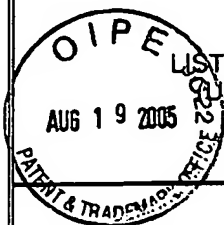
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						Yes	No
AF	JP 62-089543	04-1987	Japan			X	
AG	DD 284905	01-1988	East Germany			X	
HW	JP 62-089543	04/1987	Japan				
HW	DD 284905	01/1988	East Germany				

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AL	
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EXAMINER	NAME, SIGNATURE, DATE
	Larry J. Hill, Jr. 12/5/05

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PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.
30-5004CIPSERIAL NO.
10/614,807LIST OF ART CITED BY APPLICANT
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Wuwen Yi et al.FILING DATE
July 9, 2003GROUP
1742

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HW	AA	6,130,451	10-2000	Hasegawa			
	AB						
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OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)

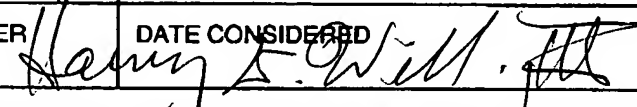
HW	AK		Solid Lubricants, Industrial Lubrication and Tribology, Nov/Dec 1995, vol. 47, iss. 6, pg. 7-18.					
HW	AL		"Aluminum and Aluminum Alloys", ASM International, 1993, pg. 639.					
	AM							

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Samy B. Wilk, III 12/5/05

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LIST OF ART CITED BY APPLICANT (Use several sheets if necessary)					APPLICANT Wuven Yi et al.			
					FILING DATE July 9, 2003		GROUP 1742	
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*Examiner Initial		Document Number	Date	Name	Class	Sub- class	Filing Date If Appropriate	
HW	AA	5,415,829	05-1995	Ohhashi et al.				
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	AH							
OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)								
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